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EXAMINER	
LE, LANA N	

ART UNIT	PAPER NUMBER
2685	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/936,561	MUNDAY ET AL.	
	Examiner	Art Unit	
	Lana Le	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *51,52,55 and 57* is/are allowed.

6)☒ Claim(s) *25, 27-34, 37-38, 40-42, 44, 46-50,53-54,56* is/are rejected.

7)☒ Claim(s) *26,35,36,39,43 and 45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 25-49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 25 does not recite specific structure/ components of a receiver front end that output a gain and noise figure.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 25, 27-31, 42, 44, and 49-50 is rejected under 35 U.S.C. 102(e) as being anticipated by Brady et al (US 6,442,374).

Regarding claim 25, Brady et al discloses a transceiver having a transmitter and receiver capable of transmitting and receiving electromagnetic wave signals having frequencies in the range of substantially 35GHz to substantially 40GHz (col 1, lines 61-

67; col 8, lines 7-18, and the receiver having a gain of substantially 24dB or above (fig. 3; gain of 24 dB at amp 324) and a noise figure of substantially 4dB or below at AMP 306 (2.5dB; fig. 3), and comprising at least one multifunction monolithic microwave integrated circuit (MMIC) (page 4, col 8, lines 7-18).

Regarding claim *27*, Brady et al further discloses *a* receiver front end according to claim *25* wherein the or each multifunction receiver front end MMIC has at least one of the following components (fig. 3):

(i) an EM wave amplifier 306 adapted to amplify the electromagnetic wave signals received by the MMIC;

(ii) a filter 308 adapted to filter the electromagnetic wave signals received by the MMIC;

(iii) a frequency converter 310 adapted to convert the frequency or frequencies of the electromagnetic wave signals to a lower or higher frequency or frequencies;

(iv) a converted-signal amplifier 324 adapted to amplify the converted signals.

Regarding claim 28, Brady et al further discloses a receiver front end according to claim *27* wherein at least two of (i) to (iv) are provided on the same chip (col 8, lines 16-25).

Regarding claim *29*, Brady et al further discloses receiver front end according to claim *27* wherein at least three of (i) to (iv) are provided on the same chip (col 8, lines 16-25).

Regarding claim *30,* Brady et al further discloses a receiver front end according to claim *27* wherein all four of (i) to (iv) are provided on the same chip (col 8, lines 16-25).

Regarding claim *31,* Brady et al further discloses receiver front end according to claim *30* which comprises a receiver MMIC and a doubler/buffer amplifier MMIC 318 (fig. 3; col 8, lines 41-44), and in which said receiver MMIC comprises a low noise amplifier (LNA) 306, with a noise figure less than 4dB (2.5dB; fig. 3).

Regarding claim 42, Brady et al further discloses a receiver front end package comprising a receiver front end according to claim 25, power supply components (voltage regulator of fig. 4) for said receiver front end, and connectors 304, 316 for said receiver and said power supply components.

Regarding claim 44, Brady et al further discloses the receiver front end package according to claim 42 having voltage bias lines wherein said power supply components comprise DC biasing circuits on a circuit board, and in which said biasing circuits contain bias sequencing and voltage regulation for all of the bias lines of said receiver front end (col 8, line 61 – col 9, line 28).

Regarding claim 49, Brady et al further discloses a high data rate communications system comprising one or more receiver front ends (fig. 3) according to claim 25 (col 1, lines 30-43).

Regarding claim 50, Brady et al discloses a receiver front end (fig. 3) comprising:

i) a first amplifier 306 adapted to amplify a received signal and provide an amplified signal (col 8, lines 26-30);

ii) a filter 308 adapted to filter said amplified signal and provide a filtered signal (col 8, lines 26-30);

iii) a mixer 310 adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal (col 8, lines 30-32);

iv) a second amplifier 324 adapted to amplify said mixed signal (col 8, line 49-56).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady et al (US 6,442,374).

Regarding claim 56, Brady et al discloses a receiver front end comprising:

i) a first amplifier 306 adapted to amplify a received signal and provide an amplified signal;

ii) a filter 308 adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer 310 adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier 324 adapted to amplify said mixed signal; and

wherein said reference signal is generated by means of a local oscillator 312, the output being passed through an amplifier 318 before being passed to a doubler at 320 to be used as said reference signal. Brady et al didn't specifically disclose the doubler is positioned before the amplifier. However, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to double the frequency and then amplify it to have a specific frequency ouput range at the mixer.

5. Claims 32, 34, 37 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brady et al (US 6,442,374) in view of Farris et al (US 6,151,491).

Regarding claim 32, Brady et al discloses a receiver front end according to claim 31 wherein Brady et al didn't further disclose said LNA is a balanced amplifier having separate amplification sections, and each electromagnetic signal received by said LNA is split into two substantially symmetric signals, each of which is fed into said separate amplification sections. Farris et al discloses said LNA is a balanced amplifier having separate amplification sections, and each electromagnetic signal received by said LNA 224 is split into two substantially symmetric signals, each of which is fed into said separate amplification sections (fig. 10b; col 23, lines 40-53). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to split

the signals into two sections in order to output two identical amplified signals to different output sections.

Regarding claim 34, Brady et al and Farris et al disclose a receiver front end according to claim 32 wherein Brady et al further discloses said receiver MMIC comprises a mixer 310, and in which said mixer is adapted to downconvert the frequency of a signal output from the LNA to a lower frequency mixer output signal (fig. 3).

Regarding claim 37, Brady et al and Farris et al disclose a receiver front end according to claim 34 wherein Brady et al discloses said receiver MMIC comprises a filter 308, and said filter is disposed between said LNA 306 and said mixer 310, to filter the signal from said LNA before it is fed to said mixer (fig. 3), and wherein they didn't specifically disclose the passband of said filter is such that it suppresses a sideband of the signal from said LNA. However, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have the filter of Farris et al suppresses a sideband in order to filter out the undesired frequencies of the signal.

Regarding claim 40, Brady et al and Farris et al disclose a receiver front end according to claim *34* wherein Brady et al discloses said doubler/buffer amplifier MMIC 318 is placed between a local oscillator 312, adapted to produce said reference signal, and said mixer 310, and the doubler/buffer amplifier MMIC receives said reference signal produced by said local oscillator and doubles the frequency of this signal at 320 producing a new reference signal which is fed to said mixer 310.

6. Claim 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brady et al (US 6,442,374) in view of Farris et al (US 6,151,491) and further in view of Ogawa (US 4,489,292).

Regarding claim 41, Brady et al and Farris et al disclose a receiver front end according to claim *40* wherein they didn't further disclose said doubler/buffer amplifier MMIC comprises a filter component comprising two quarter wavelength open circuit stubs. Ogawa discloses the amplifier MMIC comprises a filter component comprising two quarter wavelength open circuit stubs (col 1, lines 11-32). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use a two stubs with quarter wavelength in order to pass waves which are integral multiples of the fundamental passband.

7. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady et al (US 6,442,374) in view of of Farris et al (US 6,151,491) and further in view of Kennan (US 5,649,312).

Regarding claim *33,* Brady et al and Farris et al discloses a receiver front end according to claim *32* wherein Brady et al fails to further disclose each said amplification section has three stages of amplification, and the output of each said amplification section is combined, and the combined signal output from said LNA. Kennan discloses each said amplification section has three stages of amplification 10, 12 and 14, and the output of each said amplification section is combined, and the combined signal output from said LNA 14. It would have been obvious to one of ordinary skill in the art at the

time of the invention was made to have a couple stages of amplification in order to amplify incoming diversity signals from different directions of the antenna.

8. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady et al (US 6,442,374) in view of Farris et al (US 6,151,491) and further in view of Blackburn (US 5,241,291).

Regarding claim 38, Brady et al and Farris et al discloses a receiver front end according to claim 37 wherein they didn't specifically disclose said filter comprises a distributed transmission line and wherein said filter is folded into a serpentine layout. Blackburn discloses a filter comprises a distributed transmission line and wherein said filter is folded into a serpentine layout (col 1, line 45 – col 2, line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have a transmission line filter in order to provide the desired passband for a predefined selectivity.

9. Claims 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brady et al (US 6,442,374) in view of Blackburn (US 5,241,291).

Regarding claim 53, Brady et al discloses a receiver front end comprising:

i) a first amplifier 306 adapted to amplify a received signal and provide an amplified signal;

ii) a filter 308 adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer 310 adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier 324 adapted to amplify said mixed signal.

Brady et al didn't further disclose:

wherein said filter is a distributed transmission line filter, arranged in a serpentine fashion, containing quarter wave coupled elements, said filter being adapted to suppress a sideband of the output of said first amplifier.

Blackburn et al discloses the filter is a distributed transmission line arranged in a serpentine fashion, containing quarter wave coupled elements, said filter being adapted to suppress a sideband of the output of said first amplifier (col 1, line 45 – col 2, line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have a transmission line filter in order to create a desired filter topology.

Regarding claim 54, Brady et al and Blackburn disclose a receiver front end according to claim 53 wherein Blackburn further discloses said filter is adapted to have a passband of substantially 35 GHz to substantially 40 GHz based on the specified selectivity (col 1, lines 55-57).

10. Claims 46-48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brady et al (US 6,442,374) in view of Hammers et al (US 5,471,220).

Regarding claim 46, Brady et al discloses a receiver front end package according to claim 42 wherein Brady didn't disclose said receiver front end package is connected to an antenna which detects the electromagnetic waves, and is bodily movable with said

antenna. Hammers et al discloses said receiver front end package is connected to an antenna which detects the electromagnetic waves, and is bodily movable with said antenna (col 4, lines 15-60). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to receive electromagnetic waves in order to allow the antennas to pick up high millimeter waves from the surrounding environment.

Regarding claim 47, Brady et al and Hammers et al discloses a receiver front end package according to claim 46 in which Hammers et al further discloses said receiver front end package is mounted on said antenna or a movable component thereof and can move with said antenna or component (col 4, lines 30-46). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to make the receiver as part of the antenna system in order to allow the convenience of portability and compact size of the transceiver system.

Regarding claim 48, Brady et al discloses a plurality of receiver front ends according to claim 25, wherein Brady didn't specifically disclose a phased array system. Hammers et al discloses a phased array system (col 2, line 35-58). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have portable and compact sized phased array system arranged within a MMIC chip in order to independently control a plurality of receivers and transmitters by adjusting the phase of each signals.

Allowable Subject Matter

11. Claim 26, 35-36, 39, 43, 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 26, Brady et al discloses a receiver front end according to claim 25 which has a noise substantially 4dB or below, however the cited prior art fails to further disclose over an output signal frequency range of substantially 1 to 10GHz.

Regarding claim 35, Brady et al and Farris et al discloses a receiver front end according to claim 34 wherein they didn't further disclose said mixer comprises two diodes and the signal from said LNA is fed into said diodes along with a reference signal and said diodes are adapted to multiply the signal from said LNA and said reference signal and output an output signal having a frequency equal to the difference in frequency of the signal from said LNA and the frequency of said reference signal.

Regarding claim 36, Brady et al and Farris et al fail to further disclose receiver front end according to claim 35 wherein said mixer is a 90° balanced mixer.

Regarding claim 39, Brady et al, Farris and Blackburn discloses a receiver front end according to claim 31 wherein Brady et al discloses said receiver MMIC comprises an IF amplifier 324 (fig. 3), and the IF amplifier is adapted to receive an IF output signal from said mixer and to amplify it to produce an IF output signal which is output from said receiver MMIC, the cited prior art didn't specifically disclose wherein said amplifier comprises a single transistor stage having gate and drain. Harford US 4,275,362) discloses wherein said amplifier comprises a transistor stage having gate and drain

terminals, however, the cited prior fails to further disclose and in which a parallel resistor-inductor-capacitor feedback network is applied between said gate and drain terminals of said transistor.

Regarding claim 43, Brady et al discloses a receiver front end package according to claim 42 wherein the cited prior fails to further disclose which is double sided with separate enclosures and provides isolation of said electromagnetic wave receiver front end and said power supply components into the separate enclosures, and in which connections are made between said receiver front end and said power supply components using glass bead feedthroughs in said package.

Regarding claim 45, Brady et al discloses a receiver front end package according to claim 44 wherein the cited prior fails to further disclose said connectors are connected to the receiver front end using an airline launch technique with a better than 20dB impedance match of said connectors with said receiver front end.

12. Claims 51-52, 55, 57 are allowable over the cited prior art.

13. The following is an examiner's statement of reasons for allowance:

Regarding claim 51, Brady et al discloses a receiver front end comprising:

i) a first amplifier 306 adapted to amplify a received signal and provide an amplified signal;

ii) a filter 308 adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer 310 adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier 324 adapted to amplify said mixed signal.

Friesen et al (US 5,428,839) discloses wherein the first amplifier comprises:

a) a first Lange coupler 54 adapted to split the signal in first and second signals such that said first and second signals have substantially 90° phase difference (col 6, lines 15-33).

However, the cited prior art fails to further disclose:

b) a first amplification section adapted to amplify said first signal and a second amplification section adapted to amplify said second signal, said first and second amplification sections having balanced topographies, each section having first, second and third transistors and a gate and a drain bias for said transistors, said gate and drain biases being common to all the transistors; shunt resistors associated with the gate of each transistor; a series resistor inductor-capacitor network in parallel with said section; and parallel feedback being provided across said third transistor; and

c) said first and second stages having respective outputs, and a further Lange coupler being provided so as to combine said outputs of said amplification sections.

Regarding claim 52, Brady et al discloses a receiver front end comprising:

i) a first amplifier 306 adapted to amplify a received signal and provide an amplified signal;

ii) a filter 308 adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer 310 adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier 324 adapted to amplify said mixed signal; and

However, the cited prior art fails to further disclose:

wherein said mixer comprises:

a) a Lange coupler arranged such that both said reference signal and said filtered signal are added together and then separated into first and second signals with a phase difference of substantially 90°; and

b) first and second diodes, each supplied with one of said phase separated first and second signals, said first and second diodes being arranged such that said first diode is in one orientation with respect to said first input signal and said second diode is in the opposite orientation with respect to said second signal;

and arranged such that a combined output signal of said first and second diodes has a frequency substantially equal to the difference between said reference and filtered signals.

Regarding claim 55, Kennan (EP 0,752,756) discloses a receiver front end comprising:

i) a first amplifier 12, 13 adapted to amplify a received signal and provide an amplified signal;

ii) a filter 15 adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer 14, 28, 30 coupled to an impedance matching circuit 24, 26 adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier 36, 44 adapted to amplify said mixed signal; and

However, the cited prior art fails to further disclose:

wherein said second amplifier has an output impedance and comprises a single transistor having a gate and a drain bias, a resistor-inductor-capacitor network provided between gate and drain terminals of said transistor and a resistor-capacitor network adapted to match said input impedance of the second amplifier to that required by said mixer for proper operation thereof.

Regarding claim 57, Kennan (EP 0,752,756) discloses a receiver front end comprising:

i) a first amplifier 13 adapted to amplify a received signal and provide an amplified signal;

ii) a filter 15 adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer 28, 30 adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier 36 adapted to amplify said mixed signal; and

wherein the first amplifier 13 comprises:

a) a first Lange coupler 14 adapted to split the signal in first and second signals such that said first and second signals have substantially 90° phase difference;

b) a first amplification section 12 adapted to amplify said first signal and a second amplification section 13 adapted to amplify said second signal, said first and second amplification sections having balanced topographies.

Blackburn (S 5,241,291) further discloses wherein said filter is a distributed transmission line filter, arranged in a serpentine fashion, containing quarter wave coupled elements, said filter being adapted to suppress a sideband of the output of said first amplifier (col 1, lines 27-65).

However, the cited prior art fails to further disclose:

each section having first, second and third transistors and a gate and a drain bias for said transistors, said gate and drain biases being common to all the transistors; shunt resistors associated with the gate of each transistor; a series resistor-inductor-capacitor network in parallel with said section, and parallel feedback being provided across said third transistor; and

c) said first and second stages having respective outputs, and a further Lange coupler being provided so as to combine said outputs of said amplification sections; and

wherein said mixer comprises:

a) a Lange coupler arranged such that both said reference signal and said filtered signal are added together and then separated into first and second signals with a phase difference of substantially 90°; and

b) first and second diodes, each supplied with one of said phase separated first and second signals, said first and second diodes being arranged such that said first diode is in one orientation with respect to said first input signal and said second diode is in the opposite orientation with respect to said second signal; and arranged such that a combined output signal of said first and second diodes has a frequency substantially equal to the difference between said reference and filtered signals; and

wherein said second amplifier has an output impedance and comprises a single transistor having a gate and a drain bias, a resistor-inductor-capacitor network provided between gate and drain terminals of said transistor and a resistor-capacitor network adapted to match said input impedance of the second amplifier to that required by said mixer for proper operation thereof; and wherein said reference signal is generated by means of a local oscillator, the output of which is sued to supply a frequency doubler, the output of said doubler being passed through an amplifier before being used as said reference signal.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lana Le whose telephone number is (703) 308-5836. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lana Le

April 4, 2004

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